

Work Order ID 114855

March-17-14 8:26:20 AM

\*114855\*

Page 1

Item ID: D206-667-207BL

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Stop \*NS2\*

Start Date: 3/17/14 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ Date: 14-03-17 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-247	A (DEO)								
IIN-D206-667	D								

100 Document Control 0.00

\*100\*

DC

DOCUMENT CONTROL

Memo 0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D206-667-207 chg 002

DAS  
06  
9-89

JUN 17 2014

110 BENDING MACHINE - CROSSTUBES 0.00

\*110\*

CNC Bend 2

BENDING MACHINE - CROSSTUBES

Memo 0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-247 using CNC bender program D206-667-207

W 14-05-29

Ro

11-22-54

11-22-54

DQA:

Date:

14/01/11

## WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed:

Date:

14/6/27

Work Order update only ☐

Work Order: <u>114855</u>	<b>DISPOSITION</b> Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>			
Part No. <u>D206667-207 BL</u>		Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>
NCR No. <u>14-3982</u>		Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>
		Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>
		Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	

Root Cause		Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design		14/6/2	110	1	CRUSHING is over tolerance  Rc. Process/Bending.	DAS 12 9-89  14/6/2	Acceptable.  Location is not critical in bending  Ref attached S.R.	DAS 12 9-89  14/6/2	DAS 16 9-89  14/6/27	DAS 16 9-89  14/6/27
Doc/Data										
Equip/Tooling										
Handling/Pre										
Material										
Operator										
Offset/Setup										
Process	X									
Supplier										
Training										
Transport										
Unapproved										

## FAULT CATEGORY

<b>Landing Gear</b> <input checked="" type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function	<input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
---	--	---	--	--

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March-17-14 8:26:20 AM

\*114855\*

Page 2

Item ID: D206-667-207BL

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\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

120

QC15- Crosstube Dimensional Check

0.00

DAS

\*120\*

16

QC

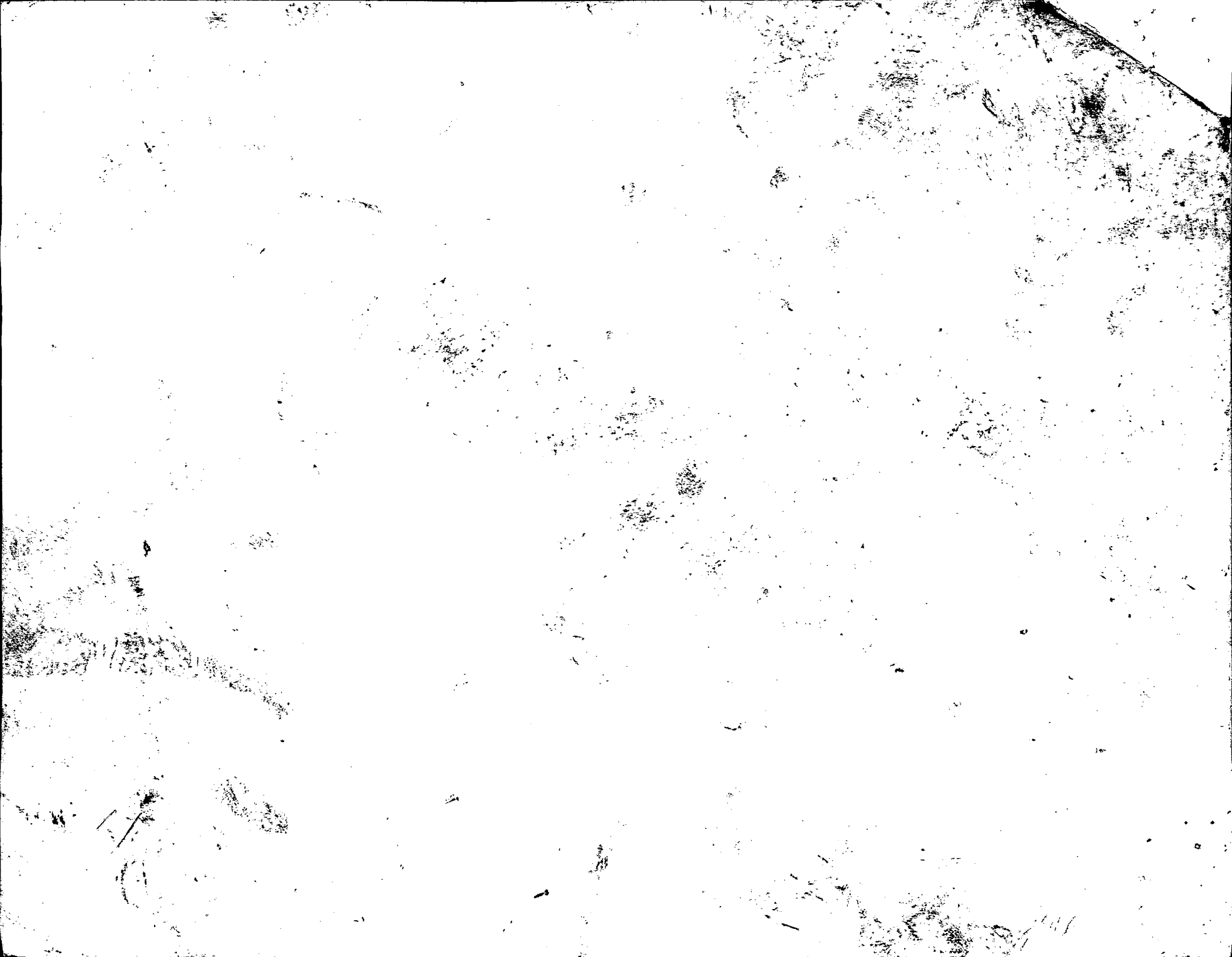
Memo

0.00

9-89

Quality Control

14/06/02



Work Order ID 114855

March-17-14 8:26:20 AM

\*114855\*

Page 3

Item ID: D206-667-207BL

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14

Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 3/31/14

Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

0.00

\*130\*

Crosstubes

Crosstubes

Memo

0.00

\*\*\*\*\* ENSURE PROPER JIG POSITIONING BEFORE DRILLING\*\*\*\*\*  
VERIFIED BY:                      \*\*\*\*\*

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D206-667-247. Drill all (3) top holes. Holes facing inboard. Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247

\*\*\*\*\* ENSURE PROPER JIG POSITIONING BEFORE DRILLING\*\*\*\*\*  
VERIFIED BY:                      \*\*\*\*\*

2- Drill fwd rivet holes using drill Jig DT8787 fwd as per Dwg D206-667-247.  
Note: FWD side has 3X top holes facing inboard.

3- C'sink holes as per dwg D206-667-247. Allow rivet to sit below surface to compensate for paint.

4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. Drill ONLY 2 top holes ONLY plug most bottom hole to prevent accidental drilling. Drill holes and ream using drill Jig DT8583 & DT8584 as per Dwg D206-667-247. Drill only the top (2) holes. Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-247

\*\*\*\*\* ENSURE PROPER JIG POSITIONING BEFORE DRILLING\*\*\*\*\*  
VERIFIED BY:                      \*\*\*\*\*

5-Drill aft rivet holes using drill Jig DT8787 aft as per Dwg D206-667-247.

BL/14-06-03



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Page 4

Item ID: D206-667-207BL

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\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Stop \*NS2\*

Start Date: 3/17/14 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*  
Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	Drill only the top (2) holes.								
	***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** VERIFIED BY: <i>[Signature]</i> *****								
	6- C'sink holes as per dwg D206-667-247. Allow rivet to sit below surface to compensate for paint.								
	7- Scribe tube to identify on the inner chamfer in the cuff D# and B#								
	8-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-247								
140	QC5- Inspect part completeness to step on W/O	0.00							
*140*									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								

DAS  
27  
9-89

14/6/3

*BC/EB* 14-06-03

*EB* 14-06-03



**Work Order ID 114855**

March-17-14 8:26:20 AM

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Item ID: D206-667-207BL

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Stop **\*NS2\***

Start Date: 3/17/14

Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 3/31/14

Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

150

0.00

**\*150\***

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- CLEAN CROSSTUBE WITH WASH'N WIPE

1 0 0 18  
14-6-5

170

Outsource process - NDT per QSI038 4.1

0.00

**\*170\***

Outsource2

Memo

0.00

Outsource process - NDT

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Liquid Penetrant Inspection as per QSI 038Or

Issue P/O: 21484

LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

CX 14/06/050

180

0.00

**\*180\***

Packaging

Packaging

Memo

0.00

Packaging

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Ensure copy of NDT results attached to work order.

14/06/050

# Work Order ID 114855

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**\*114855\***

Page 6

Item ID: D206-667-207BL

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	QC5- Inspect part completeness to step on W/O	0.00							
<b>*190*</b>									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Ensure results are as per Dwg D206-667-247								
195		0.00							
<b>*195*</b>									
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION								
197	QC7-Inspect Chemical Conversion Coat	0.00							
<b>*197*</b>									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								

DAS

27

3-89

14/6/6

BL

14-06-06

DAS

41

9-89

14-6-6

**Work Order ID 114855**

March-17-14 8:26:20 AM

**\*114855\***

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Item ID: D206-667-207BL

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	SprayPaint	0.00							
<b>*200*</b>									
SprayPaint	Memo	0.00							
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1-Prime inside and outside crosstube as per QSI 005 4.2								
	2-Paint outside crosstube as per QSI 005 4.2								
	PRIME: <u>m128 927</u>								
	Start Time: <u>1:00</u>								
	Finish Time: <u>1:30</u>								
	PAINT: <u>129 174</u>								
	Start Time: <u>5:30</u>								
	Finish Time: <u>6:00</u>								
	clear: <u>m129058</u>								
210	QC14- Inspect Spray Paint	0.00							
<b>*210*</b>									
QC	Memo	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								

DAS  
41  
9-89

14-6-10

# Work Order ID 114855

March-17-14 8:26:20 AM

**\*114855\***

Page 8

Item ID: D206-667-207BL

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Stop **\*NS2\***

Start Date: 3/17/14 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220		0.00							
<b>*220*</b>	Crosstubes								
Crosstubes	Memo	0.00				1			2/14-06-08
Crosstubes	1-Install nut plates as per Dwg D206-667-247.								
230		0.00							
<b>*230*</b>	Skidtubes								
Crosstubes	Memo	0.00				1	0	0	AS
Crosstubes	1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe								14-6-10
	2-Install supports with Proseal 890 per DSI9565 and QSI 015								
	A/R Proseal 890 Batch: <u>128638</u>								
	3- Torque bolts as per dwg exp 10/14								
240		0.00							
<b>*240*</b>	QC5- Inspect part completeness to step on W/O	0.00							
QC	Memo	0.00							
Quality Control									

DAS

27

9-89

4/6/16



**Work Order ID 114855**

March-17-14 8:26:20 AM

**\*114855\***

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Item ID: D206-667-207BL

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**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Stop **\*NS2\***Start Date: 3/17/14 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC.(Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursTool ID Tool # Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

280

QC21- Final Inspection - Work Order Release

0.00

**\*280\***

QC

Memo

0.00

Quality Control



# Picklist Print

March-17-14 8:26:24 AM

Page 1

Work Order ID: 114855

**\*114855\***

Parent Item: D206-667-207BL

**\*D206-667-207RI \***

Parent Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14

Required Date: 3/31/14

Start Qty: 1.00

Required Qty: 1.00

Comments: RevA 11.01.13 New Issue EC verified by:DD  
11.08.08 PER ECN 11-615 DD VERF:EC

IPP REV:B

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D206-667-247TRN

Manufactured No

110

Each

6.0000

1

**\*D206-667-247TRN\***

Crosstube Assembly, Mid Aft

B115043

\*\*

①

JW 14-05-29

Location

Loc Qty

Loc Code

LG014

6

104918

1

105213

1

105215

1

109227

1

109228

1

109229

1

D2873-043

Manufactured No

220

Each

52.0000

2

**\*D2873-043\***

Nut Plate Assembly

\*\*

2

CR 14-06-08

Location

Loc Qty

Loc Code

LG052

52

104871

1

107964

20

112264

31

D2873-045

Manufactured No

220

Each

57.0000

2

**\*D2873-045\***

Nut Plate Assembly

\*\*

2

CR 14-06-08

Location

Loc Qty

Loc Code

LG

40

112430

40

LG052

17

108829

17

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**\*D206-667-207BI \***

Parent Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14

Required Date: 3/31/14

Start Qty: 1.00

Required Qty: 1.00

MS20601-AD4W10

Purchased

No

220

Each

158.0000

14

14

**\*MS20601-AD4W10\***

RIVET

\*\*

14

CL 14-06-08

Location

Loc Qty

Loc Code

LG050

158

M127301

58

M127578

100

D2892-1

Manufactured

No

230

Each

16.0000

2

2

**\*D2892-1\***

Support

\*\*

AL 14-6-10

Location

Loc Qty

Loc Code

LG052

16

103634

2

105652

14

D3595-063-450

Manufactured

No

230

Each

60.0000

4

4

**\*D3595-063-450\***

Rubber Cushion

\*\*

AL 14-6-10

Location

Loc Qty

Loc Code

FG

15

88422

5

94274

10

FP

3

111922

3

LG

40

111000

10

111538

20

112445

10

LG051

2

109526

2

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Shop Packet Print

Page 2



# Picklist Print

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Work Order ID: 114855

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Parent Item: D206-667-207BL

**\*D206-667-207BI \***

Parent Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14

Required Date: 3/31/14

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

230

Each

131.0000

4

4

**\*MS21920-22\***

Clamp

\*\*

AS 14-6-10

Location

Loc Qty

Loc Code

LG050

131

M127255

40

M127608

41

M128199

50

AN5-10A

Purchased

No

250

Each

424.0000

10

10

**\*AN5-10A\***

BOLT

\*\*

M128634

DAS

32

89

DAS

31

89

Location

Loc Qty

Loc Code

GA

101

122800

101

ST362

116

M127432

116

st503

207

M126180

207

AN5-32A

Purchased

No

250

Each

364.0000

4

4

**\*AN5-32A\***

Bolt

\*\*

DAS

32

9-89

DAS

31

9-89

Location

Loc Qty

Loc Code

ST337

134

124215

130

m127363

4

st503

230

m127550

30

m128403

200

DAS  
06  
9-89

17/4/18 ①

M128403

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Shop Packet Print

Page 3

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**\*D206-667-207BI \***

Parent Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14

Required Date: 3/31/14

Start Qty: 1.00

Required Qty: 1.00

AN5-34A

Purchased

No

250

Each

114.0000

4

4

**\*AN5-34A\***

Bolt

DAS  
32  
9-89

DAS  
31  
9-89

Location

Loc Qty

Loc Code

ST338

114

m126176

14

m127817

14

m127933

36

m128403

50

M128403

MS21042LS

Purchased

No

250

Each

816.0000

4

4

**\*MS21042I 5\***

Nut

\*\*

DAS  
32  
9-89

DAS  
31  
9-89

Location

Loc Qty

Loc Code

GA

5

117611

5

ST315

311

m127304

311

ST509

500

m127813

500

NAS1149D0563J

Purchased

No

250

Each

5,011.000

18

18

**\*NAS1149D0563.I\***

Washer

\*\*

DAS  
32  
9-89

DAS  
31  
9-89

Location

Loc Qty

Loc Code

GA

273

m125807

273

ST510a

4738

m126319

2738

m128257

2000

14/4/14 (1)

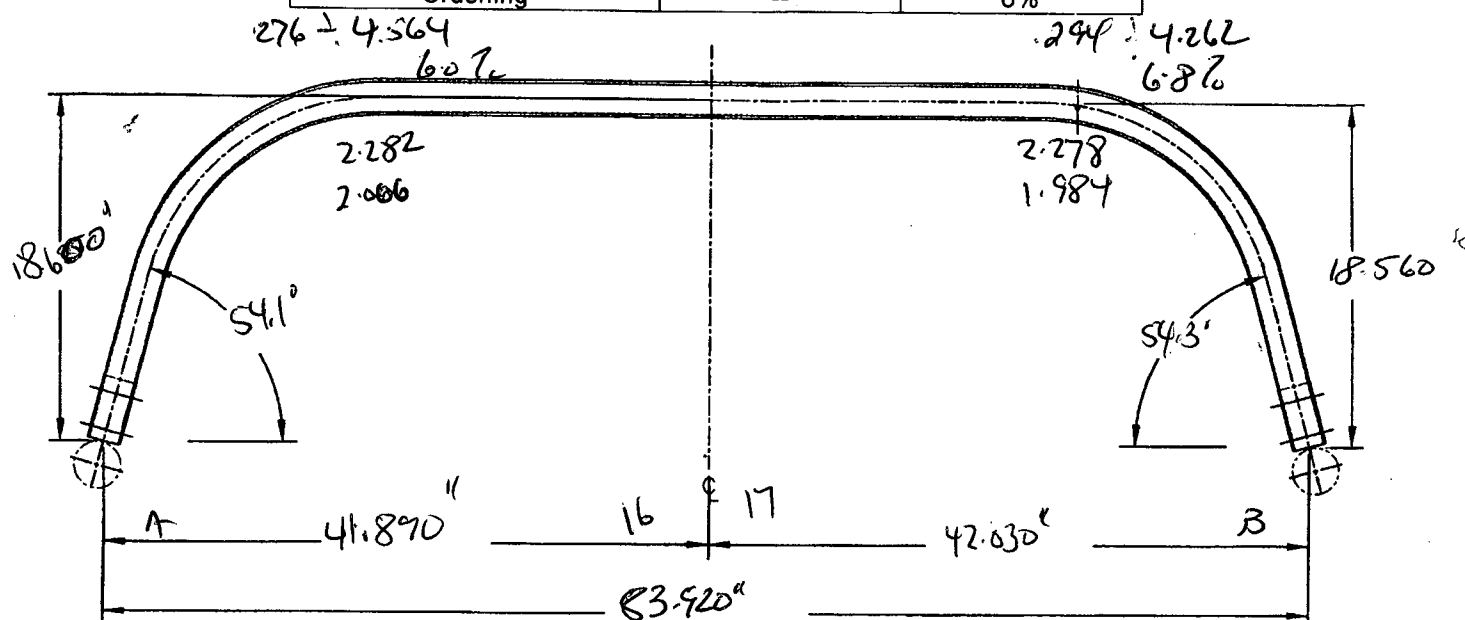
March-17-14 8:26:24 AM

Shop Packet Print

Page 4

DART AEROSPACE LTD		Work Order:	114855
Description: Crosstube Mid Aft (206L)		Part Number:	D206-667-207
Inspection Dwg: D206-667-247	Rev: A	Page 1 of 1	

Required Dimension	Min	Max
Height	18.34	18.60
1/2 Span	41.79	42.05
Angle	54°	56°
Total Span	83.59	84.09
Bending Passes	10	--
Crushing	--	6%



	Side A	Side B
Bending Passes	16	17
Crushing	6.07%	6.87%
Comments		
Side A = 6.07% crush @ 16 Passes.		
Side B = 6.87% crush @ 17 Passes.		

QC15 Inspection	DAS
Date	16
	9-89 14/11/02

Rev	Date	Change	Revised by	Approved
A	12.02.15	New Issue	KJ	
B	12.04.16	Added bending, crushing dimensions	KJ	

Item	Qty	Part Number	Description
	-247		
1	X	D206-667-247	CROSSTUBE ASSEMBLY (206L MID AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6004-115  
FINISHED LENGTH = 99.76±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1,  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-247" AND BATCH NUMBER ON  
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 21.1 lbs (-607 = 17.7 lbs)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI  
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE  
D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE  
LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

114855 MLJ  
1403-17

DEO ATTACHED

SCW #11-615

11.07.28

UNDER REVIEW

RELEASED  
2011-05-24

A	NEW ISSUE	CP	10.12.23
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

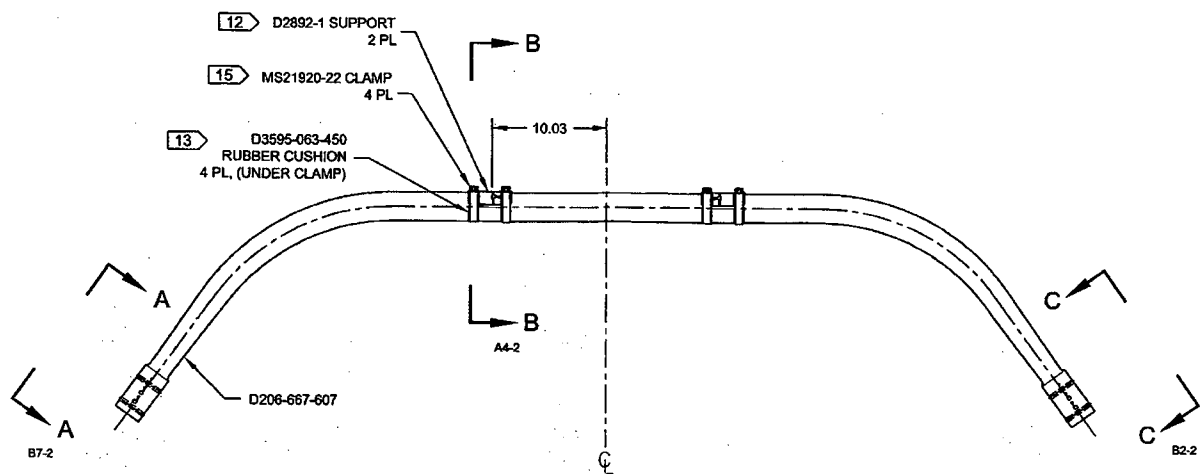
**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. A  
D206-667-247 SHEET 1 OF 4

TITLE SCALE  
CROSSTUBE ASS'Y (206L MID AFT) NTS

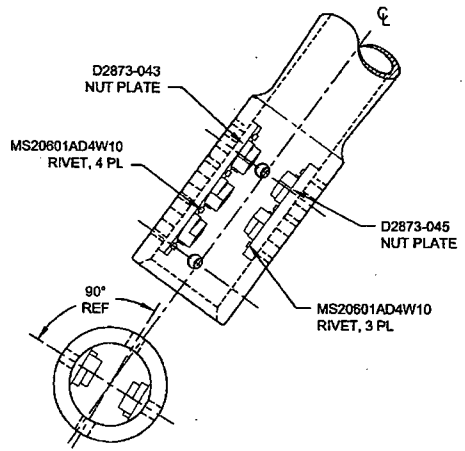
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8 7 6 5 4 3 2 1

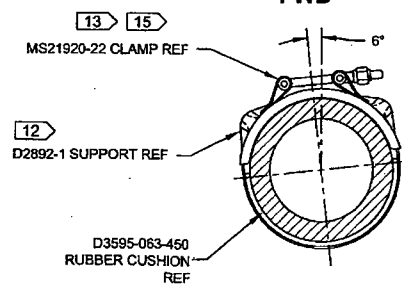


6011-615  
11.07.20  
**UNDER REVIEW**  
*[Signature]*

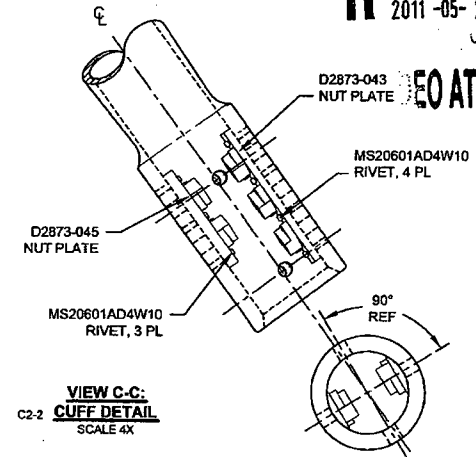
**D206-667-247**  
**ASSEMBLY DETAIL**  
(VIEW LOOKING FWD)



**VIEW A-A:**  
**CUFF DETAIL**  
SCALE 4X



**SECTION B-B**  
SCALE 5X



**VIEW C-C:**  
**CUFF DETAIL**  
SCALE 4X

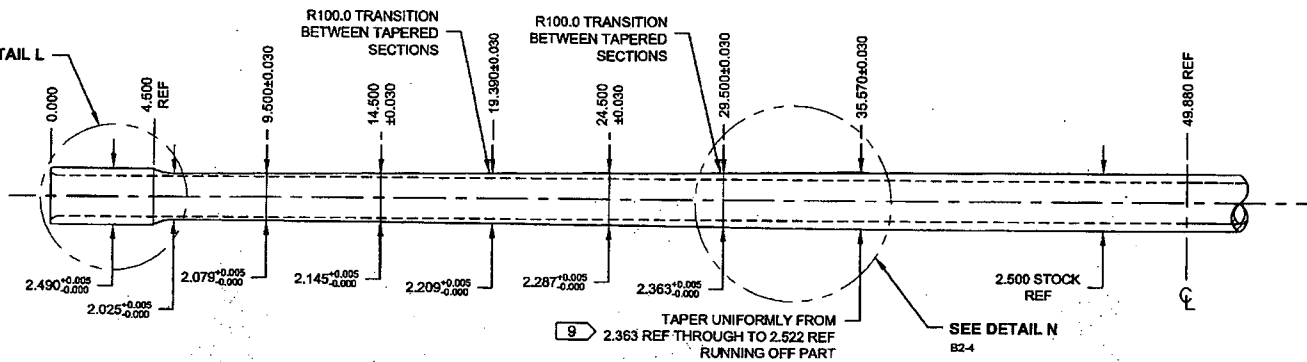
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DRAWN	<i>[Signature]</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	<i>[Signature]</i>	D206-667-247	SHEET 2 OF 4
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	CROSSTUBE ASSY (206L MID AFT)	NTS
DATE	10.12.23	<small>COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE, OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

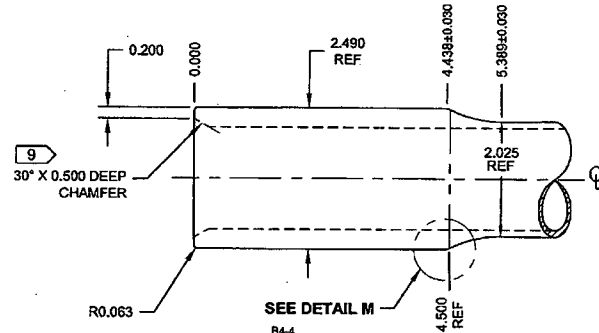
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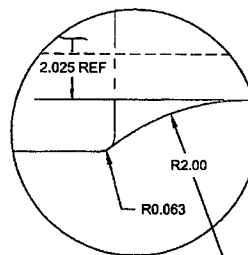
SEE DETAIL L  
B7-4



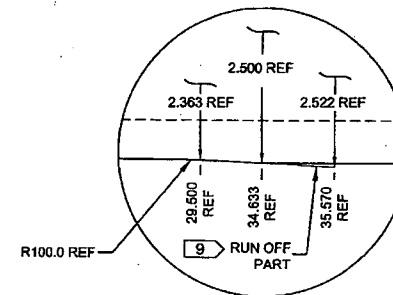
TURNING DETAIL



C7-4 DETAIL L: CROSSTUBE CUFF  
SCALE 2.5X



B6-4 DETAIL M: CUFF TRANSITION  
NOT TO SCALE



C4-4 DETAIL N: TAPER RUN-OFF  
NOT TO SCALE

BCN #4-615  
 11.07.28  
 UNDER REVIEW  
 11.06.13

DEO ATTACHED

RELEASED  
 2011-05-26

DESIGN	99	<b>DART AEROSPACE LTD</b>	
DRAWN	99	HAWKESBURY, ONTARIO, CANADA	
CHECKED	99	DRAWING NO.	REV. A
MFG. APPR.	99	D206-667-247	SHEET 4 OF 4
APPROVED	99	TITLE	SCALE
DE APPR.	99	CROSSTUBE ASSY (206L MID AFT)	NTS
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DRAWING NO. D206-667-247	TITLE CROSSTUBE ASS'Y (206L MID AFT)	REV. A	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>		D.E.O. NO. D206-667-247-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>q2</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>AD</i>	APPROVED <i>JMP</i>		DE APPR. <i>HT</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:**

IS:

Item	Qty -247	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2892-1 SUPPORT: ABRABE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

**RELEASED**  
2011-07-28  
*JW*



## **D206-667-247**

### **Tangent lines**

Center line

15" from CUFF

19" from Center line

### **2-Set-up**

2.5" Rollers WITH 1.6" Spacers

Buggy A - 3.125"

All programs run with long end of tube on **LARGE TABLE**

### **3-BENDING:**

**Step 1: Y 3290      W 1580**

Run program 206247 1-2-3-4 from 19" line down taper, buggy A on Cuff.  
then CHECK

**Step 2: Y 3340      W 3440**

run program 206247 10 (check), 11 - 11a - b - c - d check , from 15" line

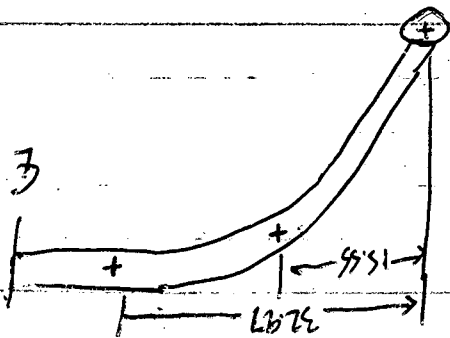
**drill table setup:** red towers #4, bottom support towers "loose"

14/03/12.. Bent tubes with programs, (1-4 CHECK, 10 CHECK, 11-11d  
CHECK, 11e-11h CHECK

11i,1J etc.. checking between each!)

(CRUSHING OF D206-667-207

\*Acceptability of 8% CRUSHING AT END OF BEAM



Point A:  $OD_1 = 2.43$ ,  $OD_2 = 2.07$

CRUSHING =  $(2.43 - 2.07) / (2.43 + 2.07) = 8\%$   
 $0.551 = I = 0.335$  in from average

Point B:  $OD = 2.50$  in  $ID = 1.80$  in

$I = 1.402$

A:  $F = Mc/I = P \times 15.55 \times 2.07 / 2 \times 0.551 = 2921.1 P$   
 B:  $= P \times 32.97 \times 2.50 / 2 \times 1.402 = 2939.1 P$

$MS = 2939 / 2921 = 1.01$

The will break at support before area of high crushing. 8% crushing up to middle of beam is acceptable.

13/1/22

Hydro





**skyservice**  
Air travel. Evolved.

# NDT Work Order

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: YYZ 70275	Customer: DART AEROSPACE	Dept: NDT YYZ	Reference: 24484
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	DAS	Tail#:

Task: ☒ Scheduled ☐ Unscheduled ☐ A.O.G. ☒ Y.F.T. ☐ M.T. ☐ E.T. ☐ U.T. ☐ R.T.

Work Required: 14/10/16

① CARRY OUT NDT ON FOLLOWING AFT MID HEIGHT CROSSTUBES

ITEM ID: D206-667-207BL IAW ASTM E1417-M13

WORK ORDER ID'S = 114855; 114854; 114579; 114578

② CARRY OUT NDT ON FOLLOWING FWD CROSSTUBES

ITEM ID: D212-664-101 IAW ASTM E1417-M13

WORK ORDER ID'S = 119544; 119543; 119542; 119541

Action Taken:	Date:	Initial/Stamp:
---------------	-------	----------------

① LIQUID PENETRANT + EDDY CURRENT INSPECTIONS

CARRIED OUT ON AFT MID HEIGHT CROSSTUBES 05 JUN 2014

WD'S 114855, 114854, 114579; 114578

NO CRACKS FOUND



② LIQUID PENETRANT + EDDY CURRENT INSPECTIONS

CARRIED OUT ~~OUT~~ ON FWD CROSSTUBES

05 JUN 2014

WD'S 119544, 119543, 119542, 119541

NO CRACKS FOUND



PENETRANT - ARDROX 970 P25E BATCH

02312131

ET - NORTEC 500S SNT-20656 CAL DUE

30 JAN 2015

I certified that the maintenance described above has been performed with the applicable standard of airworthiness.

Signature:

Name: GARY SMITH

ACA/SCA Stamp



Date:

05 JUN  
2014

Work Order ID 114855

March-17-14 8:26:20 AM

\*114855\*

Page 1

Item ID: D206-667-207BL

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Aft Mid Height Crosstube 206L/L1/L3/L4, Blue

Start Date: 3/17/14 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 3/31/14 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ Date: 14-03-17 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*  
Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-247	A (DEO)								
IIN-D206-667	D								

100 Document Control 0.00

\*100\*

DC

DOCUMENT CONTROL

Memo 0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D206-667-207 chg 002

MLJ 14-06-16

110 BENDING MACHINE - CROSSTUBES 0.00

\*110\*

CNC Bend 2

Memo 0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-247 using CNC bender program D206-667-207

W 14-05-29